

IN THE CLAIMS:

Please amend the claims as follows.

1-56. (Cancelled)

57. (New) An inhaleable powder composition comprising a plurality of particulate microstructures, the particulate microstructures comprising:

- (a) a structural matrix composed of phospholipid and calcium;
- (b) an active agent;
- (c) a mean geometric diameter of 1-30 microns;
- (d) a mean aerodynamic diameter of less than 5 microns; and
- (e) a bulk density of less than about 0.5 g/cm³.

58. (New) The composition of claim 57 wherein the particulate microstructures comprise a structural matrix consisting essentially of phospholipid and calcium.

59. (New) The composition of claim 57 wherein the particulate microstructures are porous and have a mean porosity of 0.5 - 80%.

60. (New) The composition of claim 59 wherein the particulate microstructures have a mean porosity of 2 - 40%.

61. (New) The composition of claim 60 wherein the particulate microstructures have a mean pore size of 20 – 200 nm.

62. (New) The composition of claim 57 wherein the fine particle fraction of the particulate microstructures in the composition is greater than 20% w/w.

63. (New) The composition of claim 62 wherein the fine particle fraction of the particulate microstructures in the composition is from about 30% to 70% w/w.

64. (New) The composition of claim 57 wherein the particulate microstructures comprise a bulk density of less than 0.1 g/cm^3 .

65. (New) The composition of claim 64 wherein the particulate microstructures comprise a bulk density of less than 0.05 g/cm^3 .

66. (New) The composition of claim 57 wherein the particulate microstructures comprise perforated microstructures.

67. (New) The composition of claim 57 wherein said particulate microstructures comprise hollow microspheres.

68. (New) The composition of claim 57 wherein the particulate microspheres comprise a shell with a thickness of $0.1 - 0.5 \text{ }\mu\text{m}$.

69. (New) The composition of claim 57 wherein the particulate microstructures comprise a mean aerodynamic diameter of between $0.5 \text{ }\mu\text{m}$ and $5 \text{ }\mu\text{m}$.

70. (New) The composition of claim 57 wherein the particulate microstructures comprise a mean geometric diameter of less than 10 microns.

71. (New) The composition of claim 70 wherein the particulate microstructures comprise mean geometric diameter is less than 5 microns.

72. (New) The composition of claim 57 wherein the phospholipid comprises a gel to liquid crystal transition temperature of greater than 40° C .

73. (New) The composition of claim 57 wherein the phospholipid comprises a zwitterionic phospholipid.

74. (New) The composition of claim 57 wherein the phospholipid comprises at least one of dilauroylphosphatidylcholine, dioleoylphosphatidylcholine, dipalmitoylphosphatidylcholine, disteoylphosphatidylcholine, dibehenoylphosphatidylcholine, diarachidoylphosphatidylcholine and combinations thereof.

75. (New) The composition of claim 57 wherein the active agent is a bioactive agent.

76. (New) The composition of claim 75 wherein the bioactive agent comprises at least one of antiallergics, bronchodilators, pulmonary lung surfactants, analgesics, antibiotics, antiinfectives, leukotriene inhibitors or antagonists, antihistamines, antiinflammatories, antineoplastics, anticholinergics, anesthetics, anti-tuberculars, antivirals, fungicides, immunoactive agents, vaccines, immunosuppressive agents, imaging agents, cardiovascular agents, enzymes, steroids, DNA, RNA, viral vectors, antisense agents, proteins, peptides and combinations thereof.

77. (New) The composition of claim 75 wherein the bioactive agent comprises at least one of fentanyl, morphine, lung surfactant, leuprolide, interferon, insulin, budesonide, formoterol, goserelin, and growth hormones.

78. (New) The composition of claim 75 wherein the bioactive agent is an aminoglycoside antibiotic.

79. (New) The composition of claim 75 wherein the bioactive agent is a fungicide.

80. (New) An composition comprising a plurality of particulate microstructures, the particulate microstructures comprising:
- (a) a structural matrix composed of phospholipid and calcium, the phospholipid comprising a gel to liquid crystal transition temperature of greater than 40°C;
 - (b) an active agent;
 - (c) a mean geometric diameter of 1-30 microns;
 - (d) a mean aerodynamic diameter of less than 5 microns; and
 - (e) a bulk density of less than about 0.5 g/cm³.
81. (New) The composition of claim 80 wherein the particulate microstructures comprise a structural matrix consisting essentially of phospholipid and calcium.
82. (New) The composition of claim 80 wherein the particulate microstructures are porous and have a mean porosity of 0.5 - 80%.
83. (New) The composition of claim 82 wherein the particulate microstructures have a mean porosity of 2 - 40%.
84. (New) The composition of claim 82 wherein the particulate microstructures have a mean pore size of 20 – 200 nm.
85. (New) The composition of claim 80 wherein the fine particle fraction of the particulate microstructures in the composition is greater than 20% w/w.
86. (New) The composition of claim 85 wherein the fine particle fraction of the particulate microstructures in the composition is from about 30% to 70% w/w.
87. (New) The composition of claim 80 wherein the particulate microstructures comprise a bulk density of less than 0.1 g/cm³.
88. (New) The composition of claim 87 wherein the particulate microstructures comprise a bulk density of less than 0.05 g/cm³.

89. (New) The composition of claim 80 wherein the particulate microstructures comprise perforated microstructures.

90. (New) The composition of claim 80 wherein said particulate microstructures comprise hollow microspheres.

91. (New) The composition of claim 80 wherein the particulate microspheres comprise a shell with a thickness of 0.1 - 0.5 μm .

92. (New) The composition of claim 80 wherein the particulate microstructures comprise a mean aerodynamic diameter of between 0.5 μm and 5 μm .

93. (New) The composition of claim 80 wherein the particulate microstructures comprise a mean geometric diameter of less than 10 microns.

94. (New) The composition of claim 93 wherein the particulate microstructures comprise mean geometric diameter is less than 5 microns.

95. (New) The composition of claim 80 wherein the phospholipid comprises a gel to liquid crystal transition temperature of greater than 40° C.

96. (New) The composition of claim 80 wherein the phospholipid comprises a zwitterionic phospholipid.

97. (New) The composition of claim 80 wherein the phospholipid comprises at least one of dilauroylphosphatidylcholine, dioleoylphosphatidylcholine, dipalmitoylphosphatidylcholine, disteoylphosphatidylcholine, dibehenoylphosphatidylcholine, diarachidoylphosphatidylcholine and combinations thereof.

98. (New) The composition of claim 80 wherein the active agent is a bioactive agent.

99. (New) The composition of claim 98 wherein the bioactive agent comprises at least one of antiallergics, bronchodilators, pulmonary lung surfactants, analgesics, antibiotics, antiinfectives, leukotriene inhibitors or antagonists, antihistamines, antiinflammatories, antineoplastics, anticholinergics, anesthetics. anti-tuberculars, antivirals, fungicides, immunoactive agents, vaccines, immunosuppressive agents, imaging agents, cardiovascular agents, enzymes, steroids, DNA, RNA, viral vectors, antisense agents, proteins, peptides and combinations thereof.

100. (New) The composition of claim 98 wherein the bioactive agent comprises at least one of fentanyl, morphine, lung surfactant, leuprolide, interferon, insulin, budesonide, formoterol, goserelin, and growth hormones.

101. (New) The composition of claim 98 wherein the bioactive agent is an aminoglycoside antibiotic.

102. (New) The composition of claim 98 wherein the bioactive agent is a fungicide.